

II. *New and little-known Palæarctic Perlidæ*. By KENNETH JOHN MORTON, F.E.S.

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PLATE II.

ABOUT a year ago I attempted a preliminary revision of the palæarctic species of the genus *Nemoura*, as a beginning in the direction of increasing our knowledge of the *Perlidæ*. It was then my intention to take up the genus *Leuctra* next, but the difficulty of getting materials in that genus has led me to postpone treatment of it. Additional material has, however, come to hand in other genera, and I now submit descriptions of several new species belonging to *Nemoura*, *Tæniopteryx*, and *Capnia*.

With regard to *Tæniopteryx*, as the description of the new species will include comparative references to *T. trifasciata*, it will, with the addition of appropriate figures, serve to make the latter species better known, especially as regards the ♂ structure. Albarda's paper (*Annales de la Soc. Ent. de Belgique*, tom. xxxiii.), dealing at length with the *nebulosa* group, taken in conjunction with the following notes and figures relating to *T. Risi* and *T. trifasciata*, will practically constitute a revision of the European species of the genus, the only species excepted being *monilicornis*, which I have not yet seen.

The addition of another species of *Capnia* to the British list, or rather its separation from the acknowledged *C. nigra*, is interesting, and a *Capnia* from Amurland is also described.

This opportunity is also taken to give a description and figures of a curious little form which may yet be found in this country. It was described by Rostock, in 1892, as *Capnodes Schilleri*; but as the generic name had already been used by Guenée in *Lepidoptera* in 1852, the new term *Capnopsis* is proposed.

All those entomologists who assisted me with the *Nemouræ* have contributed help with the present paper. Special thanks are due to Mr. McLachlan, not only for allowing me to examine material which may be called classical, but also for many valuable hints relating to bibliography.

Nemoura Sahlbergi, n. sp.

In the dry insect, head and pronotum are shining blackish; antennæ nearly black; pronotal plate faintly brown on anterior margin, indistinctly rugose on middle of disc, about same breadth as the head without the eyes, borders ill defined, lateral margins receding slightly posteriorly. Meso- and meta-nota also shining blackish, abdomen dull black. Legs dingy testaceous, femora, and apices of tibiæ and tarsi fuscous. Wings greyish, sub-hyaline, iridescent, neuration pale fuscous, and faintly clouded with fuscous about pterostigma and χ nervures; in the hindwings the superior cubitus seems to leave the radius at a considerable distance from the basal cell.

A species of the *aricularis* group, not presenting strong characters, excepting in the appendages of the σ , which are very distinct. Broad at the base, these appendages become more slender in the shaft, and at the apex there is a broad membranous expansion internally, the chitinized portion forming an out-turned short hook obscurely two-pointed and inwards being produced into two long acute spears. Exp. of forewings, 14 to 17 mm.

I have seen a number of examples from Utsjoki, in the region of Lake Enara, Finnish Lapland, taken by Dr. John Sahlberg, to whom I have pleasure in dedicating the species.

Tæniopteryx Risi, n. sp.

T. trifasciata, pars. auct.

Head dark reddish-brown or blackish, antennæ blackish, long, slender, composed of elongate joints, pronotum blackish, the fore and hind margins sometimes reddish-brown, elongate, narrower in front than behind; meso- and meta-nota shining blackish, abdomen

dark reddish-brown ; legs reddish-brown, femora and tibiæ tips and the tarsi marked with fuscous. Forewings pale grey, sub-hyaline with darker clouds, neuration fuscous ; hindwings clearer, slightly dark at the tips. In the forewings the number of free nervures running from the upper cubitus to the apical margin is usually two. The darker cloudings are these : a vague blotch nearer the base, followed by a broad median crescent and a narrow crescent, rarely any evidence of an apical blotch.

In the ♂ the ventral plate is large, elongate, lateral margins slightly inturned ; apex strongly recurved, its outline rounded and entire. The genitalia are complicated and the nature of the various parts uncertain ; two spiniform appendages are sometimes visible in addition to those shown in fig. 1. Expanse of forewings : ♂, 18-22 mm. ; ♀, 21-28 mm.

This insect has long been known to Dr. Ris from Switzerland, and held by him to be a good species, contrary to the views of Albarda (expressed in 1889), who considered it to be a form of *T. trifasciata*. It is, however, abundantly distinct from *trifasciata* in which the ventral plate of the ♂ is shorter, the apex excised and less recurved. In the present species also the antennæ are more slender, composed of longer joints, and having no moniliform joints like those of *trifasciata*. The smaller number of free nervures arising from the apical portion of the upper branch of the cubitus (Albarda's nomenclature = upper branch of inferior cubitus of *Nemoura*, Trans. Ent. Soc. London, 1894, p. 574) is also a useful character, although perhaps not absolutely constant. It is also noteworthy that in *trifasciata* there is usually a dark marking concave inwardly at the very apex of the wing, of which marking there is rarely, if ever, any trace in *T. Risi*.

As indicated, *T. Risi* has been found in Switzerland (Zürichberg) by Dr. Ris, and amongst Mr. McLachlan's continental material there are ♀'s which I refer in the meantime to this species from the following localities : Albania (S. S. Saunders) ; Pyrenees (Eaton, 10th June) ; France (Ardèche, May, Fallou ; Vosges, 20th July, McLachlan).

In Britain it is probably generally distributed wherever there are fairly rapid streams. Mr. McLachlan has it from Haslemere, Surrey (July) ; Rannoch (between 2nd

and 12th June, 1865, McLachlan); River Yealm at Cornwood, Devon, 16th May; and Yorkshire (Dunford Bridge, 18th June). It is the species recorded from Rannoch in Ent. Mon. Mag., vol. xxvii., p. 47, as *T. trifasciata* (King and Morton), and I have found it in May and June in almost every hilly district in Scotland which I have visited.

Taniopteryx trifasciata, P., is no doubt equally widespread, but in this country, and probably elsewhere, it occurs very early in the season, and is therefore perhaps less noticed. In Scotland it is very common in the Clyde district in March, and Mr. King and I found it rather plentiful at Rannoch in the first half of April last (1895). The only British ♂ in Mr. McLachlan's collection is from the last-named locality (the late Dr. Buchanan White), but the species is well represented from the Continent: Meseritz, Posen, Prussia (Zeller, 29th April, 1849; one of the examples named by Brauer); Switzerland (Burgdorf, April, Meyer-Dür); Silesia? (presumably from Silesia, as the label is in Schneider's handwriting); Turin (15th and 16th March, Ghiliani). In my own collection are examples from Bohemia and Switzerland (Klapálek and Ris, respectively), all taken in March. All the British ♂ examples of *T. trifasciata* seen by me have the wings much abbreviated (expanse 13 to 15 mm.), whereas Continental ♂'s have usually well developed wings (23 mm.) although there are evidently exceptions, one from Turin being short-winged.

Capnia atra, n. sp.

C. nigra, Pictet, Perlides, p. 321, pl. xxxix. (in part)?

Head and thoracic segments in the dry insect shining blackish. Antennæ blackish, legs and setæ fuscous. Wings sub-hyaline with fuscous neuration. In the forewings the basal end of the lower intercubital cellule is usually acute, or at least much narrowed, and the anterior margin of the upper intercubital cellule is slightly curved. Joints of setæ short. In the ♂ the large side pieces of the genital apparatus are broad at the base, upturned, and sub-acute at the apex, which when seen from above is barbed; seen from the side there is usually visible beneath or within these pieces

a slender curved process, with a slight projection or tooth on its under side. The ante-penultimate segment dorsally raised and covered with minute points. Exp. of forewings, 12 to 17 mm., the ♀ the larger.

The ♂ first came under notice from Finnish Lapland, whence it was received from Dr. Sahlberg. It is possible females were included in a collection previously received from the same valued correspondent, and were returned by me as *C. nigra*. The species was found by King and myself in plenty on the shores of Loch Rannoch in April of this year. Three females from Braemar (Buchanan White) appear also to belong here; they have the wings rather abbreviated. The species probably also occurs in Switzerland, but the ♂ of the pair in Mr. McLachlan's collection (Burgdorf, Meyer-Dür) is not in very good condition, and further Swiss material is desirable.

A smaller insect, as a rule, in the ♀ sex than *C. nigra*, and blacker-looking when fresh. The ♂, as far as known, is full-winged. As usual, the important distinctive characters lie in the ♂ genitalia, but the points in the neuration above alluded to should be useful in separating the ♀ from that of *C. nigra*, if they are found as constant elsewhere as they appear to be in this country. A comparison of fresh material will, I think, show the prothorax to be smaller, and with margins more rounded in *C. atra* than in *C. nigra*.

It should be noticed that Pictet's figure of the neuration of *C. nigra* on pl. i., fig. 6 (Perlides, 1841), has the basal end of the lower intercubital cellule comparatively broad, while in his fig. 4, pl. xxxix., *id. op.*, the condition is more like that usual in *C. atra*, the earlier figure being stated as aberrant in the relative explanation of plate xxxix. Further, Pictet says the ♂ of *nigra* is full-winged. On these grounds some might be inclined to hold the species above described (assuming Meyer-Dür's examples as belonging thereto) as the true *nigra*. However, according to information from Dr. Ris (in letters), male *Capniæ*, practically apterous, are found in Switzerland, and from this I conclude that the two species exist there, and I am inclined to think Pictet may have confused them. The differences in the figures just alluded to become therefore of importance, and as the earlier one

seems to refer to the species now generally known as *Capnia nigra*, I retain the old name for that species.

Capnia affinis, n. sp.

Very closely allied to *C. atra*, and of about the same size, but as far as can be judged from the examples, which are carded, more brownish in colour of the head and thorax, and with wings more greyish and paler neuration.

The genitalia are also on the same plan as in *C. atra*, but differ in the following details: the barbed part of the side pieces is placed dorsally, so that it is distinctly visible when viewed from the side, and the slender curved process beneath these pieces terminates simply without projection or tooth.

Three males and a number of females from Blagowik, Amurland (22nd April), received from Mr. McLachlan. This insect may only be a race or condition of *C. atra*; but it appears sufficiently well marked to deserve a special name.

Capnia nigra, Pictet.

C. nigra, Pictet, Perlides, p. 321, pl. xxxix (in part) and pl. i. (?). *C. nigra*, Brauer and Löw, Neur. austr., p. 30 (1857).

Chloroperla bifrons, Newman, Ent. Mag., vol. v., p. 401 (1838), and Mag. Nat. Hist., n. s., vol. iii., p. 89.

For the sake of comparison with the species of the *atra* group, a few figures and notes relating to this species are given. The number of nervules between the costa and sub-costa of forewings is irregular; one only is shown in figure 4, but there may be as many as three about the middle of the wing.

Only limited materials for this species have been examined. It is a common species in the Clyde district in early spring (March and April). Brauer's Austrian types in McLachlan's collection do not seem to differ from British examples, and I have seen similar examples from Bohemia (Klapálek). Examples from Turkestan differ so little in the structure of the ♂ genitalia, that at

most they can only be considered a geographical race of *nigra*, and females from Mingrelia are large, but otherwise not appreciably distinct.

All the European males seen by me have the wings reduced to mere scales, but the ♂ from Turkestan has effective wings.

On the discovery of a second British *Capnia*, the *Chloroperla bifrons* of Newman required investigation. Mr. Waterhouse has very kindly compared the single ♀ type in Stephens' collection with both species, and is of opinion that on the whole it agrees most closely with *C. nigra*, although the basal end of the lower intercubital cellule is hardly in the condition more typical of this species. As already indicated this cellule is usually distinctly biangulate and rather broad at the basal end in *C. nigra*.

CAPNOPSIS, n. n.

Capnodes, Rostock, preoccupied.

Capnopsis Schilleri, Rostock. (Berliner Ent. Zeitschrift, xxxvii., p. 3, 1892.)

Generic characters: Hindwings smaller than forewings and without any folded portion. Sub-costa terminating about the middle of the wing. No transverse veinlets between costa and radius, beyond the junction of the sub-costa. Maxillary palpi apparently with the two basal joints short, the others long; 4th and 5th sub-equal, the 3rd slightly longer. Antennæ sub-setaceous, joints elongate, only 3 or 4 at the base shorter. Tarsi with minute middle joint, 1st and 3rd joints long, sub-equal. Setæ very short, with 9 or 10 joints only (probably only 7 in the ♂ if the difference be not due to mutilation).

Description: blackish, shining, clothed with short yellowish pubescence. Antennæ blackish fuscous, nearly black, clothed with short yellowish hairs, with five or six stronger erect hairs at apex of each joint. Pronotum about same breadth as head, transverse, margins all slightly rounded, a distinct border all round, disc rugose. Wings greyish sub-hyaline, neuration fuscous. Legs fuscous with yellow pubescence. Setæ fuscous. In the only ♂ examined the last ventral segment is somewhat rounded at the apex, and from either side of it arises a flattened piece; these

pieces converge, and when seen from the side are upturned and triangular in outline ; superior to these pieces and passing between the setæ is a large upturned tapering process (presumably the penis) which appears to have on either side of it a spiniform sheath. The ♀ does not appear to have any salient characters at apex of abdomen. Expanse of forewings : ♂, $9\frac{1}{2}$ mm.; ♀, 12 mm.

Originally described from near Dresden it has since been received from Finland, where it has been taken in several localities by Sahlberg and Palmén. As its continental range is thus considerable, it may yet prove to be an inhabitant of Great Britain.

EXPLANATION OF PLATE II.

Nemoura Sahlbergi, ♂.

- Fig. 1. Apex of abdomen from beneath.
 2. Apex of lateral appendage from side, internal aspect (more enlarged).
 3. Apex of lateral appendage from side, external aspect (more enlarged).

Teniopteryx Risi, ♂.

1. Apex of abdomen from side (from fresh example and much enlarged).
 2. Ventral plate from side (dry).
 3. Apex of ventral plate from above (dry).

Teniopteryx trifasciata, ♂.

1. Apex of ventral plate from above (dry).
 2. Apex of abdomen from side (dry).

Capnia nigra.

1. Apex of abdomen of ♂ from side.
 2. Apex of penis (?) from side in outline much enlarged (Scotland).
 3. Apex of penis (?) from side in outline much enlarged (Turkestan).
 4. Neuration of anterior wing of ♀, *a*, *b*, intercubital cellules.
 5. Neuration of posterior wing of ♀.

Capnia atra, ♂.

1. Apex of abdomen from side.
 2. Intercubital cellules of anterior wing.
 3. Dorsal view of side piece of genitalia (much enlarged).

Capnia affinis, ♂.

1. Apex of abdomen from side.

Capnopsis Schilleri.

1. Neuration of anterior wing.
 2. Neuration of posterior wing.
 3. Apex of abdomen of ♂ from side, nearer seta removed.